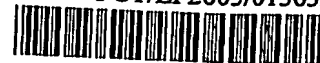


Translation

10/538265  
PATENT COOPERATION TREATY

PCT/EP2003/013632



PCT

Rec'd PCT/PTO

3 OCT 2005

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference<br>0000054132   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/EP2003/013632  | International filing date (day/month/year)<br>03 December 2003 (03.12.2003)   | Priority date (day/month/year)<br>11 December 2002 (11.12.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>C07C 29/141 |   |   |
| Applicant<br>BASF AKTIENGESELLSCHAFT  |   |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|   |   |
|---|---|
| Date of submission of the demand<br>06 July 2004 (06.07.2004) | Date of completion of this report<br>13 September 2004 (13.09.2004) |
| Name and mailing address of the IPEA/EP                       | Authorized officer  |
| Facsimile No.   | Telephone No.   |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/013632

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-15 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_ 1-4 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

- These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/13632

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)

Claims

1 - 4

YES

Claims

NO

Inventive step (IS)

Claims

1 - 4

YES

Claims

NO

Industrial applicability (IA)

Claims

1 - 4

YES

Claims

NO

### 2. Citations and explanations

(The numbering used (D1, D2, ...) corresponds to the order in which the searched prior art documents are listed in the international search report.)

The catalytic hydrogenation of appropriate saccharides to sugar alcohols such as sorbitol, xylitol etc. is already known (see the introductory part of the description of the present application and the previously published documents D3 and D4).

The problem addressed by the present invention, and the objective thereof, was to further improve the method with regard to the space-time yield, the useful life of the catalyst and the undesired formation of side products.

The method according to the invention, as proposed for addressing the aforementioned problem, differs from the (previously published) prior art in that it is essentially characterised by the production of a specific, halogen-free catalyst, using amorphous silica (as defined in claim 1 (i) and (ii)), and by the feature that the aqueous saccharide solution to be hydrogenated is contacted with the support material (silica). The effects and technical

/...

advantages associated therewith are disclosed in the description (see page 4, lines 7-31; page 10, first paragraph; page 12, second paragraph).

The combination of features disclosed in claim 1 is not previously described in either D3 or D4, which have already been correctly acknowledged in the introductory part of the description of the present application. Amorphous silica is not used as a support material in D3, and D4 describes the production of a catalyst containing chloride. Thus, the claimed method is novel (PCT Article 33(2)).

Likewise, neither D3 nor D4, whether read alone or in combination, contains any suggestions, incentives or indications that might, in an obvious manner, have led a person skilled in the art wishing to solve the problem of interest to the specific method design as per the claimed invention. There can therefore be no doubt that the claimed method is also inventive, at least in the light of the available prior art (documents D3 and D4) (PCT Article 33(3)).

The requirement that the subject matter of the claims be industrially applicable (PCT Article 33(4)) is also considered to have been satisfied.